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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,304	02/20/2004	Norman Herron	UC0412USNA	7825
23906	7590	03/24/2006	EXAMINER	
E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1128 4417 LANCASTER PIKE WILMINGTON, DE 19805			NOLAN, JASON MICHAEL	
			ART UNIT	PAPER NUMBER
			1626	
DATE MAILED: 03/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,304	HERRON ET AL.	
	Examiner	Art Unit	
	Jason M. Nolan, Ph.D.	1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/9/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 3, 9, 16, and 26-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,10,12,13 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 4,5,11,14-15 and 21-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

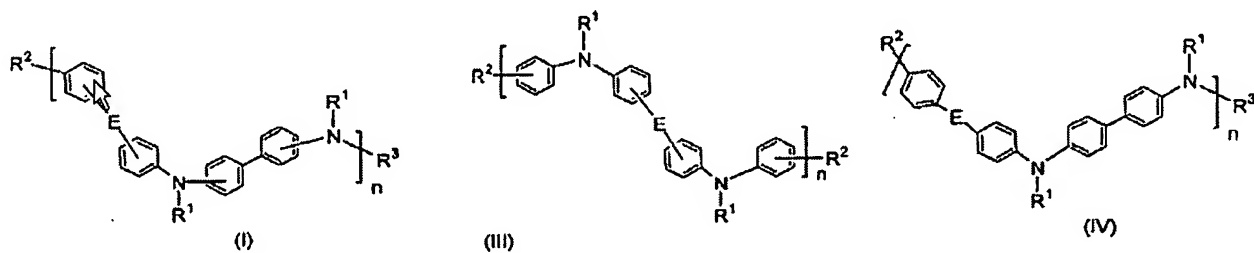
Applicant's Response to Restriction Requirement dated December 9, 2005, has been entered; accordingly, **Claims 1-37** are currently pending in the instant application, of which, **Claims 26-37** are withdrawn from further consideration as being drawn to a non-elected invention pursuant to 37 C.F.R. § 1.142(b).

Information Disclosure Statement

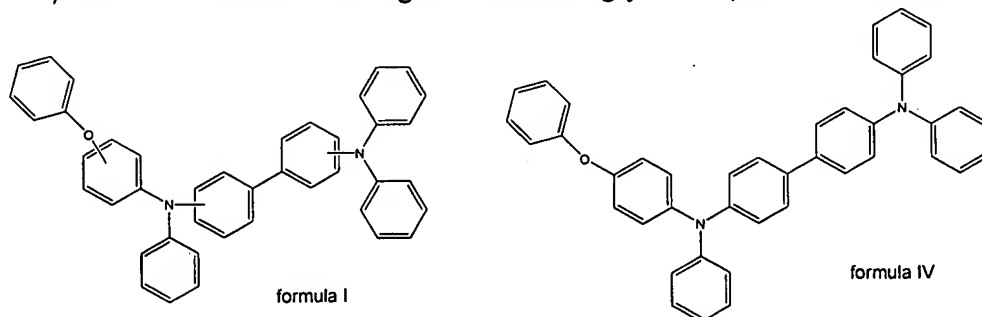
Applicant's information disclosure statements (IDS), filed on June 25, 2004, March 14, 2005, and October 31, 2005 have been considered. Please refer to Applicant's copies of the 1449 submitted herewith.

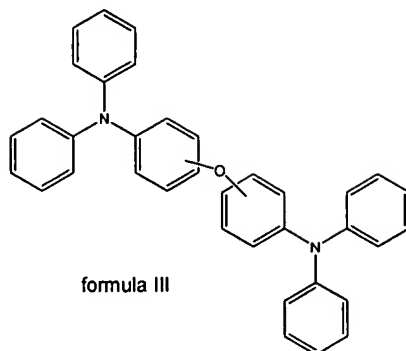
Response to Restriction

Applicants' election with traverse of **Group I, Claims 1-25**, drawn to compounds and compositions, is acknowledged. **Claims 1, 8, and 17** are the independent claims of this Group, containing formulas I, III, and IV, shown below.



Furthermore, applicants' election of the species in which: **R¹ = phenyl; R² = H; R³ = phenyl; E = O; and n = 1** is acknowledged. Accordingly, the species are shown below.





Examiner also acknowledges applicants' request to reconsider the Restriction Requirement on the grounds that no additional examination is required for the non-elected **Group II, Claims 26-37**, directed to uses and devices for the compounds and compositions of **Group I**, if the compounds and compositions of **Group I, Claims 1-25**, are found allowable.

The Examiner points out that **Inventions I and II** are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process for using the product can be practiced with other materially different products such as those disclosed in the specification (page 2, line 15 through page 3, line 5).

Therefore, because of the reasons given above, the restriction set forth is proper and not to restrict would impose a serious burden in the search and examination of this application. Because these inventions are distinct for the reasons given above and since the search required for **Group I** is not required for **Group II** and visa versa, an art reference that anticipates or finds obvious one invention may not necessarily anticipate

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of find obvious the other invention. Therefore for the reasons above, the restriction for examination purposes as indicated is proper.

In addition, because of the plethora of classes and subclasses encompassed by the scope of the compounds claimed within each of the Groups, a serious burden is imposed on the Examiner to perform a complete search of the defined areas. The compounds of **formula I in Claim 1**, **formula III in Claim 8**, and **formula IV in Claim 17** contain *core* variables **E**, **R¹**, **R²**, and **R³**; in which **E** can be O, S, (SiR⁵R⁶)_m, or (CR⁵R⁶)_m wherein **m** is an integer of 1 to 20, and combinations thereof. The compounds according to the **formulas I, III, and IV of Claims 1, 8, and 17**, respectively, can represent at least 4 patentably distinct cores for the similar **formulas I and IV** and at least 4 patentably distinct cores for **formula III** and the Examiner is faced with a serious burden to do a comprehensive search on all of these cores.

As previously stated in the restriction requirement, in accordance with M.P.E.P. 821.04 and *In re Ochiai*, 71 F.3d 1565, 37 USPQ 1127 (Fed. Cir. 1995), rejoinder of method of use claims commensurate in scope with the allowed product claims will occur following a finding that the product claims are allowable. Until such time, a restriction between product claims and process is deemed proper and maintained.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Status of the Claims

Claims 1-37 are pending in this application. **Claims 1-2 (in part), 4-8 (in part), 10-15 (in part), and 17-25 (in part)** and **3, 9, 16 and 26-37** are withdrawn from further consideration by the Examiner as being drawn to non-elected inventions under 37 CFR § 1.142(b). The withdrawn subject matter is patentably distinct from the elected subject matter as it differs in structure and element and would require separate search considerations. In addition, a reference that anticipates one invention would not render obvious the other invention.

The scope of the invention of the elected subject matter is the compounds and compositions of the **formulas I, III, and IV in Claims 1, 8, and 17** and the species in which: R^1 = phenyl; R^2 = H; R^3 = phenyl; E = O; and $n = 1$, shown above.

As a result, the examined subject matter is the compounds and compositions of the **formulas I, III, and IV in Claims 1, 8, and 17** in which: R^1 is selected from aryl or fluoroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to aryl or fluoroaryl substituted with 1 or more fluorine atoms; R^2 is selected from H, aryl, alkyl, fluoroalkyl, Cl, Br, I, fluoroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to aryl or fluoroaryl substituted with 1 or more fluorine atoms, a crosslinkable group, and an arylamino group of **formula II**, wherein R^4 is selected from aryl, H, R^1 , alkyl and fluoroalkyl; and R^7 is selected from aryl, fluoroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to aryl and fluoroaryl substituted with 1 or more fluorine atoms; R^3 is selected from H or R^1 ; E is selected from O and S; and n is an integer at least 1. This includes **Claims 1-2 (in part), 4-8 (in part), 10-15 (in part), and 17-25 (in part)**.

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As a result of the election and the corresponding scope of the invention, identified supra, the remaining subject matter of **Claims 1-2 (in part), 4-8 (in part), 10-15, and 17-25 (in part)** is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to non-elected inventions.

The scope of the invention of the non-elected and non-examined subject matter is the compounds and compositions of the **formulas I, III, and IV in Claims 1, 8, and 17** in which: **R¹** selected from heteroaryl or fluoroheteroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to heteroaryl or fluoroheteroaryl substituted with 1 or more fluorine atoms; **R²** selected from heteroaryl and fluoroheteroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to heteroaryl or fluoroheteroaryl substituted with 1 or more fluorine atoms and an arylamino group of **formula II**, wherein **R⁷** is selected from heteroaryl and fluoroheteroaryl substituted with 1 or more fluorine atoms and a crosslinkable group attached to heteroaryl and fluoroheteroaryl substituted with 1 or more fluorine atoms (NOTE: in other words, **R^{1-4 and 7}** *cannot* be heteroaryl or heterofluoroaryl); **E** is selected from (SiR⁵R⁶)_m, or (CR⁵R⁶)_m wherein **m** is an integer of 1 to 20, and combinations thereof.

The withdrawn compounds contain the variety of cores, which are patentably distinct from the elected and examined core, and are chemically recognized to differ in structure, function, and reactivity. Therefore, the subject matter which has been withdrawn from consideration as being *non-elected* subject matter materially differs in structure and composition from the elected/examined subject matter so that a reference

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which anticipates the elected/examined subject matter would not render obvious the *non*-elected subject matter.

This recognized chemical diversity of the functional groups can be seen by the various classifications of these structural cores in the U.S. classification system, i.e. class 546 for 6-membered heterocyclic rings with one nitrogen as the only heteroatom, class 548 for 5-membered heterocyclic rings with one nitrogen as the only heteroatom, and class 564 for the elected and examined compounds and compositions, etc. The fields of search required for the *non*-elected versus the elected compounds are not coextensive. All compounds falling outside the class of the selected compound are heretofore directed to *non*-elected subject matter and are withdrawn from consideration under 35 U.S.C. 121 and 37 C.F.R. 1.142(b).

Claim Rejections - 35 USC § 112, 2nd paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 4, 5, 8, 10-12, 17-18, and 20-21 are rejected under 35 U.S.C.

§ 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, in relevant part, "n is an integer of at least 1" which is unclear since it fails to point out the upper limit of *n*, rendering the claim vague and indefinite.

Claim 2 recites the limitation "The compound of claim 1, wherein at least one aromatic ring in the compound of formula (I) has one or more substituents independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl,

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fluoroalkoxy, fluoroaryloxy, and crosslinkable groups." There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites "The compound of claim 1, wherein two or more substituents on two neighboring aromatic rings in the compound of formula (I) together form an aromatic or non-aromatic ring." It is unclear if "neighboring" is meant to mean adjacent, of which there are only two adjacent aromatic rings connected through an aromatic carbon to aromatic carbon bond. It is also unclear as to what "non-aromatic rings" is comprised of. It is unclear if the Applicant is claiming non-aromatic rings to include only carbon atoms or carbon atoms as well as heteroatoms, rendering the claim vague and indefinite.

Claim 5 recites, in relevant part, "non-aromatic ring." It is unclear as to what "non-aromatic rings" is comprised of. It is unclear if the Applicant is claiming non-aromatic rings to include only carbon atoms or carbon atoms as well as heteroatoms, rendering the claim vague and indefinite.

Claim 8 recites, in relevant part, " n is an integer of at least 1" which is unclear since it fails to point out the upper limit of n , rendering the claim vague and indefinite.

Claim 10 recites the limitation "The compound of claim 8, wherein at least one aromatic ring in the compound of formula (III) has a substituent selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, fluoroaryloxy, and a crosslinkable group." There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites "The compound of claim 8, wherein two or more substituents on two neighboring aromatic rings in the compound of formula (III) together form an

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aromatic or non-aromatic ring." It is unclear if "neighboring" is meant to mean adjacent, of which there are only two adjacent aromatic rings connected through an aromatic carbon to aromatic carbon bond. It is also unclear as to what "non-aromatic rings" is comprised of. It is unclear if the Applicant is claiming non-aromatic rings to include only carbon atoms or carbon atoms as well as heteroatoms, rendering the claim vague and indefinite.

Claim 12 recites, in relevant part, "non-aromatic ring." It is unclear as to what "non-aromatic rings" is comprised of. It is unclear if the Applicant is claiming non-aromatic rings to include only carbon atoms or carbon atoms as well as heteroatoms, rendering the claim vague and indefinite.

Claim 17 recites "A compound of formula (IV)" which contains the variables R^3 and n . However, **Claim 17** does not otherwise define the limitations of R^3 and n , rendering the claim vague and indefinite.

Claim 18 recites the limitation "The compound of claim 17, wherein at least one aromatic ring in the compound of formula (I) has a substituent independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, fluoroaryloxy, and a crosslinkable group." in **Claim 17**. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 recites the limitation "R3 is selected from phenyl, 1-naphthyl and styryl." in **Claim 17**. There is insufficient antecedent basis for this limitation in the claim.

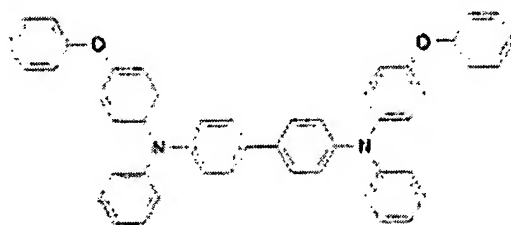
Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

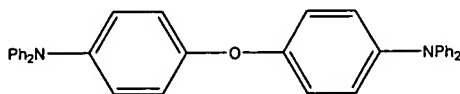
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 6-7, and 17-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Schmitz *et al.* (*Advanced Materials* **1999**, 11, No. 10, p. 821). Schmitz *et al.* teaches the compound TPD 2 shown below, for which $E = O$, $R^2 = H$, $R^1 = Ph$, $R^3 = Ph$ (substituted with OPh, interpreted to include the limitations of Claim 2 in Claim 1 wherein an aromatic ring can contain an aryloxy group), and $n = 1$.



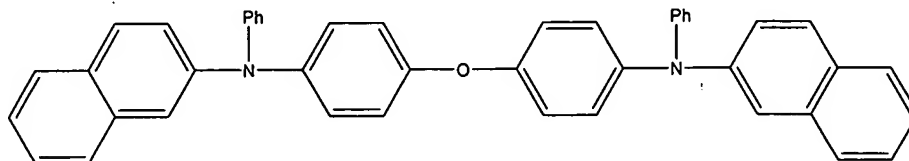
TPD 2

Claims 8, 10, and 13 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tokoli *et al.* (US Patent 4,665,000, **1987**). Tokoli *et al.* teaches the compound shown below for which $E = O$, $R^1 = Ph$, $R^2 = H$, and $n = 1$.



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Claim 12 is rejected under 35 U.S.C. § 102(b) as being anticipated by Tokoli *et al.* (US Patent 4,665,000, **1987**). Tokoli *et al.* teaches the compound shown below for which $E = O$, $R^1 = Ph$, $R^2 = H$, $n = 1$ and the compound contains adjacent substituents on a single ring that are linked to form fused aromatic ring.



Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-25 provisionally rejected on the ground of nonstatutory double patenting over **Claims 1-21** of copending Application No. **10/782,357** (*Commonly Assigned Inventors*: Norman, Johansson, and Radu; *Inventors not on Instant Application*: Smith, Dabrowski, Gentry, and Rossi). This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: **Claims 1, 3, 7-13, and 23-24** recite **Claims 1-2, 8-9, 11, 15, and 16-20** in a nearly identical manner, whereas **Claims 2, 4, 14-22, and 25** of the instant application could have also been drawn as dependent claims from the independent **Claims 1-21** of '357.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other

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copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Objections

Claims 1-2 (in part), 4-8 (in part), 10-15 (in part), and 17-25 (in part) are objected to for containing *non*-elected subject matter.

Claims 4-5, 11, 14-15, and 21-25 are objected to for depending on rejected base claims.

Conclusion

Claims 1-2 (in part), 4-8 (in part), 10-15 (in part), and 17-25 (in part), 3, 9, 16 and 26-37 are withdrawn from consideration for containing non-elected subject material.

Claims 1-2, 6-8, 10, 12-13, and 17-20 are rejected.

Claims 4-5, 11, 14-15, and 21-25 are objected.

Claims 1-25 are provisionally rejected for nonstatutory double patenting over **Claims 1-21** of copending Application No. **10/782,357**.

Claims 1, 2, 4, 5, 8, 10-12, 17-18, and 20-21 are rejected under 35 U.S.C. § 112, second paragraph.

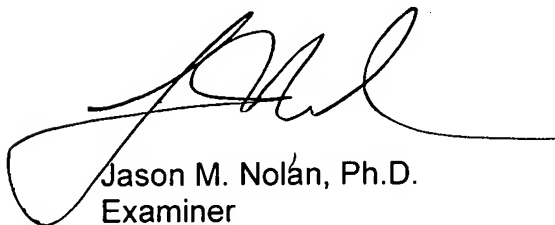
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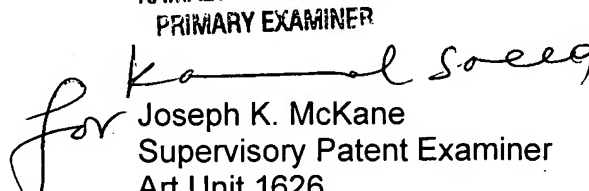
Telephone Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jason M. Nolan, Ph.D.** whose telephone number is **(571) 272-4356**. The examiner can normally be reached on Mon - Fri (9:00 - 5:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jason M. Nolan, Ph.D.
Examiner
Art Unit 1626

KAMALA A. SAEED, PH.D.
PRIMARY EXAMINER

for Joseph K. McKane
Supervisory Patent Examiner
Art Unit 1626
Date: March 20, 2006